

2015 Competition Rules for the South Dakota Regional Science Bowl

1. Regional Eligibility Rules

- 1-1 Each competing team must consist of four or five student members (only four will be playing at any time). To be eligible to compete, a high school student must be enrolled for the current school year in grades nine, ten, eleven or twelve at the team's school, and be born on or after May 5, 1995. Teams of home school students are welcome to participate. All students on a home-schooled team must live within the geographic boundaries of the team's regional event.
- 1-2 All team members must attend the same school. No school or student may compete in more than one regional competition. No student may compete on more than one team. No more than two teams from the same school may compete. Coaches must be approved by the schools their teams represent and must be at least 18 years old.
- 1-3 The winning team from the SD Regional Science Bowl is eligible to be invited to the National Science Bowl® Finals held near Washington DC. In the case that fewer than 4 players from the 1st place team can attend and participate in all the National Science Bowl® Finals activities, the invitation will be extended instead to the next highest place team from which at least 4 players can attend. A student must have competed at the regional competition on the team that attends the National Science Bowl® Finals to be eligible.
- 1-4 Within 2 weeks after the regional competition or by March 17, 2015 the winning team's coach is required to inform the National Science Bowl® Coordinator of its availability to participate in the National event. No waivers will be granted or special arrangements made for students to participate in any conflicting activities or exams. All team members (students and coach) must travel together to and from the National Finals.

2. Competition Structure

- 2-1 The South Dakota Regional competition will use a round robin format for the preliminary morning rounds and a double elimination format for the final afternoon rounds.
- 2-2 For the preliminary rounds, teams will be randomly drawn into eight groups. The number of teams in each group will be four if a full complement of teams participates. Each team will play every team in its group if a full complement of teams competes.

- 2-3 The teams with the best win-loss records will advance to the double elimination. Teams that have the same win-loss record will break their tie using a knowledge ratio. The “Scheibe” Knowledge Ratio = (Sum of correctly answered toss up questions) divided by the (Sum of asked toss up questions).
- 2-4 The top eight teams from the round robin will advance to double elimination in the afternoon. Teams will be seeded into a double elimination flowchart based on the win-loss record and the Knowledge Ratio.
- 2-5 If the score is tied at the end of the regulation time period for both the round robin and double elimination rounds, a series of five toss-up questions will be used to break the tie. Interrupt/blurt penalties are in effect. If still tied, another five toss-up questions will be used, etc. until the advancing team is determined.

3. The Questions

- 3-1 The question categories are: Biology, Chemistry, Earth and Space Science, Energy, Mathematics, and Physics. Two types of questions will be used: toss-up and bonus questions. A toss-up question may be answered by any member of either team that is actively competing. The team answering a toss-up question correctly will always get a chance to answer the bonus question. The other team is ineligible.
- 3-2 No consultation among team members is allowed on toss-up questions.
- 3-3 No team will have more than one opportunity to answer a toss-up question. If neither team answers a toss-up correctly, the moderator will proceed to the next question.
- 3-4 Questions are either multiple choice or short answer. A participant may answer a multiple-choice question with either the letter answer (W, X, Y, or Z) or the verbal answer; however, if the verbal answer is given, it must be exactly as indicated in the question or as read by the moderator. The only acceptable answer to a multiple-choice question will be the best of the four choices indicated in the question.
- 3-5 Once read in its entirety, a question will not be re-read.
- 3-6 On toss-up questions, the first player on either team to activate the lock-out buzzer system wins the right to answer the question, except that no player may buzz in until AFTER the moderator has identified the subject area of the question. If a player buzzes in prior to the reading of the subject area, the moderator will inform the player that they have buzzed in too soon. The moderator may add time to the clock, if necessary. The moderator may interrupt a player in the process of giving an incorrect answer at any time, so as to continue the flow of the game.
- 3-7 On any toss-up or bonus question, the first response given, as determined by the officials, is the only one that counts. However, if a participant gives both a letter answer and a scientific answer, both parts must be correct. Any prefacing remarks that do not directly answer the question, such as “my answer is” or repeating the question, will be considered as delaying the game and counted as an incorrect answer. (Note: a very short “um”, “er”, or vocal stumble is acceptable, provided the

officials do not consider it delaying the game.)

- 3-8 If the team's answer to a toss-up question is wrong and the question was completely read, the other team is given the opportunity to answer the toss-up question. The second team is allowed a full 5 seconds to buzz in after the moderator indicates the answer is wrong or that a blurt or consulting has occurred. (See Rules 4-1 and 4-2.)
- 3-9 The answer to the bonus question must come from the team's captain including when the question has been interrupted. Moderators should ignore an answer from anyone but the captain on the bonus question. Consultation among team members is allowed on bonus questions.
- 3-10 **The team that is not playing the toss-up or bonus question should remain quiet while the opposing team hears and answers the question.** If the non-playing team engages in behavior that is visually or verbally distracting, the opposing team will be awarded the following:
 - a) For toss-up questions: 4 points for the toss-up question, the option of having 20 additional seconds run off the clock , and the opportunity to answer the bonus question.
 - b) For bonus questions: 10 points for that bonus question and given the option of having 40 additional seconds run off the clock. The moderator will then proceed to the next toss-up question.

During each round, each non-playing team member will be allowed one "accidental" buzz during the bonus questions.

4. Verbal Recognition & Consulting

- 4-1 The only player who may answer a toss-up question is the one who has buzzed in first. Before answering the question, the team member who has buzzed in must be verbally recognized by the moderator. If a student was not recognized, their response is treated as a non-answer (Blurt) and the moderator will award 4 points to the opposing team but not indicate whether the answer was right or wrong. The toss-up question is then offered to the opposing team, if eligible. If the question has not been completely read, the question is re-read in its entirety, and the opposing team has an opportunity to answer the toss-up question and if correct, a chance to answer the bonus question.
- 4-2 On toss-up questions if a player on either team buzzes in prior to the question being read in its entirety it is called an "Interrupt". If a player interrupts and is verbally recognized by the moderator, the player may answer the toss-up question, and if correct, the team is allowed to answer the bonus question.
- 4-3 If a toss-up question is interrupted, verbally recognized and is incorrect, the question is re-read in its entirety to the opposing team. This is a penalty and 4 points are awarded to the opposing team. (See Rule 6-3)
- 4-4 On toss-up questions, no consultation among team members may occur.

- a. Prior to buzz: Should consultation among any of the team members occur, without a team member buzzing in, or if any team member should give an answer without buzzing in, any answer given does not count. The moderator does not indicate whether the answer given was correct or incorrect and the team loses the right to answer the toss-up question. The question is then offered to the opposing team, if eligible.
 - b. After a buzz: If consulting occurs, the consulting is then classified as a blurt as in previous rule, and 4 penalty points will be awarded to the opposing team.
- 4-5 If the moderator inadvertently gives the answer to a toss-up question without giving either team a chance to respond, the moderator will proceed to the next toss-up question.
- 4-6 *If the moderator inadvertently gives the answer to a toss-up question before allowing the second team to respond (after an incorrect answer, or an answer given without the team member being recognized) the next toss-up question will be read to the second team in place of the inadvertently answered question. If this situation occurs on question #25, the officials will obtain a replacement toss-up question.*
- 4-7 On a toss-up question, if the moderator inadvertently recognizes a player other than the one who buzzed in, the player who buzzed in will be allowed to answer as though he/she had been correctly recognized. If the player who was inadvertently recognized answers the question, it will be considered a blurt.
- 4-8 On a bonus question, if the moderator inadvertently responds to someone other than the captain while indicating whether an answer is correct, the next bonus question will be read to the team eligible for the bonus. If this situation occurs on question #25, the officials will obtain a replacement bonus question.

5. Timing Rules

- 5-1 The round is played until either the time expires or all twenty-five toss-up questions (and earned bonuses for correct toss-ups) have been read. Regional competitions will have two 8-minute halves with a 2-minute break. Each half begins with a toss-up question.
- 5-2 After reading a toss-up question, the moderator will allow 5 seconds for the two teams to buzz in before proceeding to the next toss-up question. Timing begins after the moderator has completed reading the toss-up question. If a player has not buzzed in before the allowed 5 seconds the timekeeper calls "TIME".
- 5-3 A participant who has buzzed in on a toss-up question must answer the question promptly after being verbally recognized by the moderator. After recognizing a participant, the moderator will allow for a natural pause (up to 3 seconds), but if the moderator determines that stalling occurred, it will be treated as a wrong answer and the team loses its opportunity to answer the question and it is offered to the opposing team if eligible.

- 5-4 After a team member has answered a toss-up question correctly, the team is given the opportunity to answer a bonus question. The team will have 20 seconds for its captain to begin to give its answer to the bonus question. Consultation among team members is allowed on bonus questions.
- 5-5 On a bonus question, the signal "5 SECONDS" will be spoken by the timekeeper after 15 seconds of the allowed 20 seconds have expired. Additionally the timekeeper will indicate the end of the 20-second bonus period by saying "TIME". If the team captain has not begun the response before the timekeeper calls "TIME", the answer does not count. If the team captain has begun the response, he/she may complete the answer, but may not stall.
- 5-6 If a toss-up question is begun before time expires in a half, that question will be finished under the usual rules of play, including the bonus if the toss-up question is answered correctly. The half is then over. A question will be considered to have been begun if the subject area has been completely read. The second half will begin with the first toss-up question not read in the first half.

6. Scoring

- 6-1 Toss-up questions are worth 4 points, and bonus questions are worth 10 points.
- 6-2 If a toss-up question is interrupted, the player recognized, and the answer is correct, the team will receive 4 points.
- 6-3 If a toss-up question is interrupted, the player recognized, and the answer is incorrect, 4 penalty points are added to the opposing team's score.

Or - If a toss-up question is interrupted and the player buzzing in answers without being verbally recognized, 4 penalty points are added to the opposing team's score.
Or - On a toss-up question, if consultation occurs on the team buzzing in, 4 penalty points are added to the opposing team's score.

The question is re-read in its entirety, and the opposing team has an opportunity to answer the toss-up question and, if correct, the chance to answer the bonus question.

- 6-4 *The double interrupt.* If a toss-up question is interrupted and a team incurs a penalty as in the previous rule, 4 points are added to the opposing team's score. The question is re-read in its entirety to the opposing team. However, if the opposing team interrupts the re-reading and subsequently incurs a penalty as in the previous rule, 4 points are added to the first team's score. The moderator will give the correct answer and move on to the next toss-up question.
- 6-5 If the moderator inadvertently gives an answer to a toss-up question without giving either team a chance to respond, no points are awarded and the moderator goes on to the next toss-up question. The scorekeeper should draw a line through that question on the score sheet indicating that the question does not count.

- 6-6 Both team captains shall sign the moderators score sheet at the end of each round.

Summary of Scoring:

| Type of Question | Points Awarded |
|--|--|
| Correctly answered toss-up Incorrectly answered toss-up | +4 points, & eligible for bonus +0 points |
| Correctly answered bonus Incorrectly answered bonus | +10 points +0 points |
| Interrupted toss-up: Verbally recognized & correct Verbally recognized & incorrect | +4 points, & eligible for bonus +4 penalty points to opposing team |
| After a team member buzzes in: Unrecognized Toss-up (Blurt) Unrecognized Interrupted Toss-up Consultation among players | +4 penalty points to opposing team +4 penalty points to opposing team +4 penalty points to opposing team |
| Before a team member buzzes in: Answering a toss-up Consultation among players | +0 points but team cannot answer toss-up +0 points but team cannot answer toss-up |

7. Challenges (OFFICIALS: See also “Question/Challenge Procedure with cell phones”)

- 7-1 Challenges must be made before the moderator begins the next question, or for the last question of a half, within three seconds of the end of that half. No challenges may be made during the play of a question. The next question begins as soon as the moderator reads the subject area. All challenges must come from the four team members who are actively competing. The fifth team member and/or the coach may not object verbally or by signal. If either the fifth team member or the coach objects verbally or by signal to the active team members, the challenge will not be allowed. All decisions of the judges are final.
- 7-2 Challenges may be made either to scientific content or to the application of the rules. Challenges may NOT be made to judgment calls by the officials, including but not limited to whether: a question has been interrupted; 5 seconds have elapsed before a student buzzes in on a toss-up; 20 seconds have elapsed before a captain begins answering a bonus; a half has expired before a new toss-up question begins; a stall or consultation has occurred; a player has given a first response; or time should be added back to the clock.

- 7-3 Challenges to scientific content will be limited to two unsuccessful challenges per team per round, including tiebreaker questions. Successful challenges do not count against this limit. After the second unsuccessful challenge for a team during a round, that team will not be allowed any further challenges to scientific content during that round. Challenges to the application of rules may be made at any time; however, whether a scientific challenge has been made and whether it has been successful are judgement calls, and may not be challenged, as per rule 7-2.
- 7-4 Should a question or challenge arise during a competition, the competition and the clock will be stopped until the question is resolved. Once the question has been resolved, the match will continue from that point. Should the moderator decide that some time was lost due to the interruption in play, the moderator has the right to put the appropriate amount of time back on the clock.
- 7-5 If a team's answer to a toss-up question is judged incorrect, and they wish to challenge the ruling on the basis of scientific content, but the opposing team is still eligible for the toss-up, the first team should hold its challenge until after the opposing team has completed its toss-up opportunity. The first team should then state its challenge before the next bonus or toss-up question is read. If the challenge is denied, play will proceed as usual from the end of the second team's answer. If the challenge is upheld, the second team's answer will be disregarded and the time lost since the first team's answer was disallowed will be put back on the clock. The first team will then have the opportunity to answer the bonus question.

8. Miscellaneous Rules

- 8-1 Substitutions may be made only at the half. If a team has five players, the player who did not play in the first half may substitute for any of the four starters. Teams may switch captains, but only at the half.
- 8-2 No one in the audience may communicate with participants during the match; communication will result in ejection from the competition room for that round. The officials may clear the room of coaches, alternates, and observers if communication is suspected.
- 8-3 If someone in the audience shouts out an answer, the question will be thrown out (as will the person) and the moderator will proceed to the next question.
- 8-4 Prior to each match, the two team coaches will introduce themselves and their fifth team member, if present, to each other and will sit together in the back row of the competition room.
- 8-5 No notes may be brought to the competition table. Nothing may be written before the clock starts. Scratch paper will be provided at the beginning of each match and collected at half-time and at the conclusion of the match.
- 8-6 Calculators are not permitted.
- 8-7 Members of the audience (students, coaches and spectators) will not be allowed to

write (exception is the All-Star Score Sheet) or use any electronic recording or transmitting device, including digital cameras, cell phones, tablets, or computers during the match. If this occurs, the individual(s) will be asked to leave the competition room.

- 8-8 Coaches will be given an “All-Star Score Sheet” to mark correctly answered toss-up questions by his/her team members. These sheets shall be handed in to the time keeper at the end of the morning session.
- 8-9 No cell phone or electronic devices may be used at any time in any of the competition rooms by students, coaches, or spectators.

See Next Page for APPENDIX – QUESTION CONVENTIONS

APPENDIX – Question Conventions

A-1 The following conventions will be followed for all questions, unless the question specifies otherwise:

- (1) Gravitational acceleration and factors related to motion – gravitational acceleration on Earth should be assumed to be 9.8 m/sec^2 or 32 ft/sec^2 , dependent on whether the question is stated in terms of metric or English units, respectively. Questions involving gravitational acceleration should be assumed to have a setting near the surface of the Earth, and non-specified factors affecting motion such as wind resistance, friction, etc. should be ignored.
- (2) Equally likely probabilities -- in probability problems involving an object such as a coin or die, the object should be considered fair, i.e., each possible outcome is equally likely. Probabilities involving genders should assume that female/male outcomes are equally likely.
- (3) Functions – functions should be considered as functions of real numbers, with the domain considered to be the largest possible subset of the real numbers and the range the smallest possible subset of the real numbers for the corresponding domain.

A-2 The following conventions will be followed regarding the form of an answer to a short answer question, unless the question specifies otherwise:

- (1) Numerical answers – all numerical answers should be given in exact and simplest form.
 - (i) Answers that are integers should be expressed in their integer form (e.g., 2^3 should be expressed as 8).
 - (ii) Fractions that are part of answers should be in lowest terms. Fractions with absolute values greater than 1 may be expressed as either improper fractions or mixed fractions, and answers should not contain negative exponents (e.g., $\frac{12}{20}x^{-4}$ should be expressed as $\frac{3}{5x^4}$).
 - (iii) Answers that contain irrational numbers should be exact rather than approximate (e.g., the area of a circle of radius 3 should be expressed as 9π).
 - (iv) Answers containing radicals should express the radical part in simplest rationalized radical form (e.g., $\frac{8}{\sqrt[3]{32}}$ should be expressed as $2\sqrt[3]{2}$).
 - (v) Answers that are complex numbers should be expressed in $a + bi$ form; if either a or b is 0, stating the 0 term is optional. If trigonometric (polar) form is requested, the magnitude should be positive and the angle θ should satisfy $0 \leq \theta < 2\pi$ in radians or $0 \leq \theta < 360$ in degrees.
 - (vi) Answers that are polynomials should be expressed in standard polynomial form, with terms in order of decreasing degree (e.g., $(x + 3)^2$ should be expressed as $x^2 + 6x + 9$).
 - (vii) Polynomials should be factored over the integers (e.g., $x^3 + x^2 - 2x - 2$ should be factored as $(x^2 - 2)(x + 1)$).
 - (viii) Equations should be solved over the real numbers (e.g., the solutions of $x^4 - 9 = 0$ are $\pm\sqrt{3}$).

- (ix) Answers should not be expressed in scientific notation unless it is specified. Answers should not be expressed as repeating decimals, but rather as fractions.
- (2) Balancing chemical equations – the coefficients of a balanced chemical equation should be integers with no common integer factor greater than 1.
- (3) Biological classification – an answer that is the name of a biological taxonomic classification should be the scientific name (e.g., Arthropoda as opposed to arthropods).
- (4) Multiple answers – on questions that give a list of choices and ask for all choices that satisfy a certain property, the choices will be numbered. Either the verbal names or the numbers will be acceptable.
- (5) Units – if a question specifies the measurement unit for an answer, the unit does not need to be stated in the answer. However, if it is stated, it must be correct.